

# Modern Concepts of Cardiovascular Disease

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## HEART DISEASE AND PREGNANCY

### Part II

#### Specific Forms of Heart Disease

**Rheumatic heart disease**—The largest number of cases of cardiac disease seen in obstetrical practice are due to rheumatic heart disease. It has held the major interest of the literature and views on it have changed greatly from the pessimism engendered by the early disastrous experiences to the comparative optimism arising from the safety of childbearing if the patients are properly treated. It is often difficult to obtain accurate statistics on the simplest matters. The incidence of rheumatic heart disease in women of childbearing age is a case in point. Many factors tend to influence the value of findings but in the United States the incidence varies probably between 1 and 2 per cent. It varies with climate and general living conditions.

The milder and earlier forms of rheumatic heart disease are entirely compatible with childbearing and require no other treatment than observation for exacerbation of the rheumatic infection and sudden change in the circulatory state. In this group, the diagnosis may be difficult or impossible. Physiologic findings such as functional murmurs and variations in the appearance of the heart shadow may suggest the presence of heart disease, and cardiovascular changes produced by pregnancy may be even more suggestive. In these cases, a diagnosis of "possible heart disease" may be necessary. Such patients deserve the same prenatal observation as those who have proved early rheumatic heart disease. The outlook for all of these patients is generally good.

The relatively small group of patients who have the anatomic and functional signs of advanced heart disease of rheumatic origin present serious problems. The prognostic considerations previously discussed apply especially to this group of patients. Congestive failure is a most dreaded event which outweighs all other complications. It is directly or indirectly responsible for well over half of the fatalities in this group and many of the patients who survive have varying degrees of decompensation. The chances of recovery are greatly increased by early treatment. These patients should, therefore, be closely observed for general lassitude, insomnia, persistent cough, tendency to dyspnea or tachycardia, rales at the pulmonary bases and excessive gain in weight from fluid retention. These should be considered possible evidence of early congestive failure; exact diagnosis and strict treatment are imperative. To let advanced failure develop before treatment is instituted is a serious blunder.

The onset of congestive failure in cases of rheumatic heart disease shows a close correlation with the increase in the load of pregnancy. Unless heart disease is advanced and severe, congestive failure is uncommon during the first half of pregnancy; from the twenty-fourth to the thirty-sixth week the incidence rises rapidly, but it is rare for congestive

heart failure to appear initially during the last four weeks of pregnancy. The incidence of death in relation to the stage of pregnancy, however, increases steadily as pregnancy advances and nearly a quarter of all fatalities occur during labor and the twenty-four hours following it. This is why caesarean section was advanced as a means of reducing mortality. There is no convincing evidence that it has done so. It is almost impossible to obtain clear cut statistics on the subject but at present the tendency is to use caesarean section conservatively.

Embolism is another important cause of death in these cases. It is, frequently, a complication of congestive failure. The large majority of embolic episodes occur in patients who have already been described as having an unfavorable outlook; the heart disease has progressed to its final stages, and the patient has frequently reached an age at which the cardiovascular system is less resistant to insults. In younger women with relatively early heart disease and good cardiac function, these complications occur much less frequently. Statistical experiences from the whole group cannot well be applied to the individual case. Subacute bacterial endocarditis has been a danger in the past but with modern treatment, it is much less important. Obstetrical complications, including toxemias, show apparently a similar incidence and severity in women with and without heart disease.

**Syphilitic heart disease**—This is rare in women and relatively little is known about its relation to pregnancy. Syphilitic valvular heart disease and pregnancy may be considered and treated on the same principles as the corresponding rheumatic valvular heart disease. In addition, the most advanced methods of antibiotic therapy should be employed. Aneurysm entails the added risk of rupture and patients with this lesion are probably delivered more safely by caesarean section.

**Degenerative forms of heart disease**—In recent years the cardiologist has taken an increased interest in degenerative cardiovascular conditions in pregnancy. Their close relationship to some aspects of toxemia is being recognized.

Disease of the coronary arteries is rare among women of childbearing age. Most precordial pain in this group of women has other causes but there remains a small group of women with symptoms and signs which justify a diagnosis of coronary disease. Some of them have myocardial infarction. There is evidence that hypertension in the coronary arteries may lead to subintimal hemorrhage which frequently is a precursor of thrombosis and infarction. It is also thought that strain on infarcted myocardium may cause rupture. It is, therefore, rational to guide pregnancy and delivery in women with coronary disease to protect the heart against increase in blood pressure. In this condition caesarean section may be the delivery of choice.

Rupture of the aorta in women of childbearing age is associated with degenerative changes in the media of unknown etiology. It may be precipitated by the strain of late pregnancy or labor, but cannot be satisfactorily explained by the mechanism of these two conditions. It is rare.

The cause of hypertension is unknown and so is the cause of hypertension in pregnancy. The latter may be "essential hypertension" or it may be evidence of toxemia. Differentiation between the two is difficult. Toxemia has been thought to exist when there is "increase in blood pressure and appearance of proteinuria, or marked proteinuria alone, or edema in combination with either of the above, or toxemic symptoms" (Chesley). It has long since been demonstrated that the mortality from cardiovascular renal disease was much increased among women who had had increased blood pressure in connection with childbearing. Sometimes, it appeared that the course of hypertension took a more unfavorable course following childbearing and it was assumed that childbearing affected essential hypertension unfavorably. Recent work by Chesley and his associates has more closely defined this danger. It appears that women with essential hypertension are more liable to toxemia (as defined above) than are women with normal blood pressures. Also toxemia is likely to leave essential hypertension worse than it was before the pregnancy.

However, among the hypertensive women as a group Chesley and his associates found no evidence that repeated pregnancies significantly increased the annual death rate, but this statement may not be entirely valid, for the group of women who had had only one pregnancy may include more severe cases than those who attempted several pregnancies. The impression remains that pregnancy is an added hazard in essential hypertension. Records are now available of successful childbearing following sympathectomy for hypertension.

Kyphoscoliotic heart disease is rare among women of childbearing age, but those who attempt preg-

nancy present difficult problems. It is the more difficult because its rarity is a bar to accumulation of adequate experience. Depending on the shape and degree of the deformity both the lungs and the heart may be twisted and dislocated in such a manner as to interfere seriously with their function. Kyphoscoliotic persons have an increased tendency to cardiovascular and pulmonary difficulties. The abdominal space is often inadequate for pregnancy and the growing uterus may press upon the diaphragm and further embarrass the heart and lungs. Childbearing is, therefore, a great hazard to women with kyphoscoliosis. Close prenatal care is essential; general rules cannot be made but cyanosis, cough (pulmonary congestion) and other signs of cardiovascular difficulties carry more than usual significance for the death rate among these women is believed to be high. Caesarean section is often necessary.

#### Comment

The purpose of this review has been to summarize the modern concepts of the relationship between childbearing and the cardiovascular system and especially recent advances in this field. An attempt has been made to show that this field, though sharply confined by definition is, nevertheless, wide of scope and in many aspects is closely related to important cardiovascular problems. Further progress will be made with advancing knowledge of the etiology of rheumatic heart disease, hypertension, congestive heart failure and of the endocrine changes associated with pregnancy, especially concerning the function of the pituitary and the adrenal glands. Therapeutically, this has been one of the most successful fields in medicine; the success is due, especially to greater physiologic knowledge of the cardiovascular changes associated with pregnancy and to the practical application of this knowledge through improved prenatal care.

Julius Jensen, M.D.  
St. Louis 8, Missouri

#### ANNUAL MEETING

The Annual Meeting and Twenty-Second Scientific Session of the American Heart Association will be held in Atlantic City, New Jersey, on June 3 and 4, 1949. The Chalfonte-Haddon Hall will be the headquarters for all meetings and for the Annual Dinner which will take place on Saturday evening, June 4.

The Chairman of the Program Committee for the Annual Scientific Session is Dr. Eugene A. Stead, Jr., Duke University School of Medicine, Durham, North Carolina. All who desire to present papers at the meetings in Atlantic City on June 3 and 4 should forward to Dr. Stead an abstract (in triplicate) of the proposed presentation of 300-words. The deadline for the receipt of abstracts is March 1, 1949.

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